



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,381	11/20/2003	Herve Y. Kermel	FIS920030193US1 (16928)	9525
23389	7590	07/11/2005	EXAMINER	
SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			LINDSAY JR, WALTER LEE	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/718,381	Applicant(s) KERMEL ET AL.	
	Examiner Walter L. Lindsay, Jr.	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

This Office Action is in response to an Amendment filed on 5/3/2005.

Currently, claims 1, 4-17 are pending. Claims 10-17 have been withdrawn from consideration.

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 2812

4. Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Derwent-ACC-No 2002-178025 published 8/21/2001 the detailed Abstract) in view of Fleming et al. (U.S. Patent No. 6,290,859 dated 9/18/2001).

Kim shows the method substantially as claimed in Figs. 1-10 and corresponding text as: a process of removing residue from a complementary metal oxide semiconductor (CMOS) device which includes a tungsten gate conductor (22) which has been subject to stack etch/ion implantations and photoresist stripping steps comprising the step of contacting a CMOS device which includes a tungsten gate conductor with a cleaning composition comprising sulfuric acid and hydrogen peroxide, (Found in the Detailed Description and Advantage) (claim 1). Kim shows the teaching that the cleaning composition consists essentially of sulfuric acid and hydrogen peroxide (Detailed Description) (claim 9).

Kim lacks anticipation of explicitly teaching that: 1) the sulfuric acid and hydrogen peroxide in a volume ratio in the range of between about 6:1 and about 10:1, the contact occurring at atmospheric pressure and a temperature of between 70°C and about 90°C (claim 1); 2) the volume ratio of sulfuric acid to hydrogen peroxide about 8:1 (claim 4); 4) the contact of said composition with said CMOS device occurs over a period of between about 1 minute and about 10 minutes (claim 5); 5) the period of time is in the range of between about 2 minutes and about 5 minutes (claim 6); 6) the sulfuric acid and hydrogen peroxide are pre-mixed, whereby said cleaning composition is formed (claim 7) and 7) the sulfuric acid and the hydrogen peroxide are in-situ mixed, whereby said cleaning composition is formed (claim 8).

Fleming teaches a method of applying sulfuric acid and hydrogen peroxide to a device substrate. The surfaces of the device are cleaned with a sulfuric acid mixed with hydrogen peroxide in a range of 5:1 sulfuric acid: hydrogen peroxide to 10:1 sulfuric acid: hydrogen peroxide in a temperature range of 60-130°C for a time duration 0.5-10 minutes (col. 8, line 49- col. 9, line 10). The advantages of using such a method is to substantially remove any organic material from the semiconductor surfaces (col. 4, lines 30-35) and that this process is well known for removing photoresist residue from integrated circuits (i.e. a "de-scum" process) (col. 9, lines 5-10).

It would be obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method described in Kim by implementing the contact of the sulfuric acid and hydrogen peroxide at atmospheric pressure and a temperature of between 70°C and about 90°C, as taught by Fleming, with the motivation that Fleming teaches that the process will substantially remove any organic material from the semiconductor surfaces and is well known for removing photoresist residue from integrated circuits (i.e. a "de-scum" process).

Response to Arguments

5. Applicant's arguments filed 5/3/2005 in Application No. 10/718381 have been fully considered but they are not persuasive. The examiner has used the Derwent Abstract in keeping with the teachings of the Abstract. The Abstract states that this process is carried out on a semiconductor device, this statement includes CMOS devices. In regard, to the Fleming reference the ratio discussed is in relation to a solution. The piranha etch, is well known in the art of removing contaminants from the

surface of materials, so as stated above the combination of Kim and Fleming is obvious to one of ordinary skill in the art.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter L. Lindsay, Jr. whose telephone number is (571) 272-1674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2812

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WLL

July 7, 2005



MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER